



HF-12M series, 2/3"

Maximum sensor size
8mm/12mm~2/3", 16mm/25mm~-1/1.2", 35mm~-1"



<Main features>

■ Advanced optical performance suitable for the top-of-the-range series

- When the iris (aperture) is set at the orange F4 marker on the lens barrel, the HF-12M series delivers the resolving power greater than 2.1μm pixel pitch on a 2/3-inch sensor (equivalent to 12 megapixels)*1.
- The HF-12M series is capable of maintaining ultra-high definition with a 2.7 μm pixel pitch within the whole frame area. Each pixel with high optical performance enables stable checking of product dimensions and appearance.
- The HF-12M series bring out maximum performance of the image sensor with 3.45μm pixel pitch(IMX250).



Orange-colored F4 marker on the lens barrel

■ Industry-leading low distortion design of no more than 0.05%

- The lenses' unique optical design minimizes troublesome distortion. In industrial applications requiring accuracy such as dimension measurement. The series boasts an industry-leading low distortion rate of no more than 0.05%*2.
- The aspherical glass*3 mold lens enabled the smallest body and low distortion.

*1: At the working distance of 50cm
*2: In the case of HF1618-12M
*3: Installed to HF818-12M and HF1218-12M

■ FUJINON lenses' unique "4D High Resolution" performance



General machine vision lenses share the issue of resolution degradation when the working distance or aperture is changed. The HF-12M features FUJINON lenses' unique "4D High Resolution" performance. It maintains a high level of consistent image sharpness at the center as well as around the edges, while mitigating resolution degradation that typically occurs when changing a working distance or aperture value. This enables the consistent delivery of high-resolution images under a wide variety of installation and shooting conditions.

■ Ease of installation and high reliability

- Despite being high-resolution lenses with 2.7μm pixel pitch, all the five models come in a compact form factor with the external dimension of just φ33mm. This allows installation flexibility even in manufacturing facilities with space constraints.
- General machine vision lenses use iris and focus locking screws with a head protruding out from the lens body, potentially causing interference within the machine vision system. The HF-12M series come with regular locking screws as well as headless compact screws, which can be countersunk into the lens body to minimize interference with the machine vision system, thereby increasing flexibility in system installation and design.



When locked with a head-less compact screw. No head protruding from the lens body.

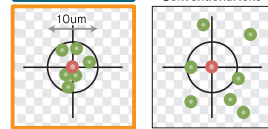
- The lenses are built with a metal barrel for durability and robustness.

Anti Shock & Vibration

The HF12M and HF-XA-5M series deliver anti-shock and anti-vibration FUJINON Anti-Shock performance suppress the optical axis shift less than 10μm.

- In the case of ordinary machine vision lenses, the optical axis shift occurs when shock moves lenses from their initial position and it affects the lenses ability to provide highly precise measurement. Fujifilm's unique mechanical design*1 paired with FUJINON Anti-Shock performance suppresses the optical axis shift less than 10μm*2 even when shock up to 10G*3 is present.

Anti Shock & Vibration



Axis shift when given repeated shocks

FUJINON Anti-Vibration performance maintains high resolution.

- The ordinary machine vision lenses have problems of toughness under working environment where vibration occurs. FUJINON Anti-Vibration performance has passed vibration test conforming to IEC60068-2-6. This feature helps keep both the mechanical and optical elements in their original position while maintaining superb resolution.



[Compliant with IEC60068-2-6]
• Vibration frequency of 10~60Hz (amplitude of 0.75mm), 60~500Hz (acceleration of 100m/S²)
• Sweep frequency of 50 cycles

Suppresses aged deterioration and provides advanced installation convenience.

- Fujifilm original mechanical design minimizes the use of adhesive to avoid aged deterioration that can be caused by humidity and heat in the production line.
- The variable throttle mechanism does not require iris parts to be changed and allows easier installation.

*1: Patent applied for
*2: Maximum impact tolerance varies by model
*3: Measured results by Fujifilm

Technology Supporting the "HF-12M Series"

High-precision glass mold aspherical lens technology –Achieving both miniaturization and low distortion–

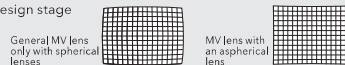
- In lens design, reducing the number of lenses and forming an image by abruptly bending light that enters the lens achieves miniaturization. Distortion cannot be controlled if the lenses are only composed of the commonly used spherical lenses. However, the aspherical lens can yield the same results of using multiple spherical lenses, enabling the control of distortion with far fewer lenses.



Aspherical lens

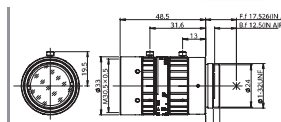
- Aspherical lenses require precision processing. Fujifilm can design and manufacture aspherical lens within its own group. The precision processing required in the design stage and its mass production is realized by accurate die machining technology.

- The HF-12M series realizes both miniaturization and low distortion by implementing the high-precision glass mold aspherical lenses.



General MV lens only with spherical lenses

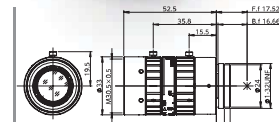
MV lens with an aspherical lens



Anti Shock & Vibration

HF818-12M

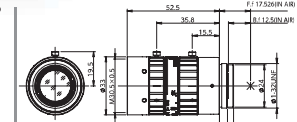
Focal length [mm]	8
Iris range (F. no)	F1.8-F22
Angle of view	56.9°×43.9°(2/3")
Working Distance*1 [mm]	∞-100
Operation of focus	Manual
Operation of iris	Manual
Filter thread [mm]	M30.5 x 0.5
Mount	C-mount
Weight (approx.) [g]	95
Sensor size(std.) ²	2/3"(2.1μm)
Sensor size (max.) ³	2/3"(2.1μm)
TV distortion [%]	-1.03
Dimension [mm]	φ33×48.5



Anti Shock & Vibration

HF1218-12M

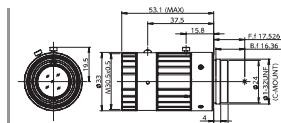
Focal length [mm]	12
Iris range (F. no)	F1.8-F22
Angle of view	39.3°×30.0°(2/3")
Working Distance*1 [mm]	∞-100
Operation of focus	Manual
Operation of iris	Manual
Filter thread [mm]	M30.5 x 0.5
Mount	C-mount
Weight (approx.) [g]	85
Sensor size(std.) ²	2/3"(2.1μm)
Sensor size (max.) ³	1/1.2"(4.5μm)
TV distortion [%]	0.18
Dimension [mm]	φ33×52.5



Anti Shock & Vibration

HF1618-12M

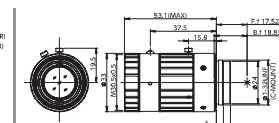
Focal length [mm]	16
Iris range (F. no)	F1.8-F22
Angle of view	30.8°×23.3°(2/3")
Working Distance*1 [mm]	∞-100
Operation of focus	Manual
Operation of iris	Manual
Filter thread [mm]	M30.5 x 0.5
Mount	C-mount
Weight (approx.) [g]	90
Sensor size(std.) ²	2/3"(2.1μm)
Sensor size (max.) ³	1/1.2"(4.5μm)
TV distortion [%]	-0.03
Dimension [mm]	φ33×52.5



Anti Shock & Vibration

HF2518-12M

Focal length [mm]	25
Iris range (F. no)	F1.8-F22
Angle of view	20.0°×15.1°(2/3")
Working Distance*1 [mm]	∞-100
Operation of focus	Manual
Operation of iris	Manual
Filter thread [mm]	M30.5 x 0.5
Mount	C-mount
Weight (approx.) [g]	85
Sensor size(std.) ²	2/3"(2.1μm)
Sensor size (max.) ³	1/1.2"(4.5μm)
TV distortion [%]	0.02
Dimension [mm]	φ33×53.1



Anti Shock & Vibration

HF3520-12M

Focal length [mm]	35
Iris range (F. no)	F2.0-F22
Angle of view	14.7°×11.0°(2/3")
Working Distance*1 [mm]	∞-200
Operation of focus	Manual
Operation of iris	Manual
Filter thread [mm]	M30.5 x 0.5
Mount	C-mount
Weight (approx.) [g]	85
Sensor size(std.) ²	2/3"(2.1μm)
Sensor size (max.) ³	1"(4.5μm)
TV distortion [%]	0.01
Dimension [mm]	φ33×53.1

*1: From front of lens barrel

*2: Sensor size(std.): Ideal size to maximize the target resolution

*3: Sensor size(max.): Appropriate sensor size varies depending on the model. Please check the amount of light and resolution on the edges pertaining to your particular application.